



Next Club Meeting Sunday 12th May Belviour Guides Hall 6 Silva Drive West Wodonga

Meetings commence with a BBQ (with a donation tin for meat) at 12pm with meeting afterwards

Members are encouraged to turn up a little earlier for clubroom maintenance

Call in Via VK3RWO, 146.975, 123 Hz tone



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Improvements to VK3CH outside Radio Box

At the old place, greater shade meant that the cheap lunchbox used to house the radios in the backyard lasted a few years. The new place has more exposure to the sun and cheap lunchboxes don't cut it, they get brittle after just a few months.



Holes for rain and dirt to get in are not what we want on the radio gear.

Looking around at a cheap outside waterproof type box had a heap of ways to sort the problem, but prices varied dramatically.

EBay to the rescue, with a description that read;

“Waterproof rating up to IP65. Surface Mounted, waterproof sealed plastic electrical enclosure switch Junction box. Protect your instrument well even in harsh environments. Fireproof, explosion-proof, anti-corrosion, insulation and anti-impact. Protected from dust, rain. Durable in use. Applications: control box, transfer box, cable box, power distribution box, instrument box, shielding box etc.”



At \$24 posted, it seemed a decent option.

About a month later it arrived and it replaced the crumbling lunchbox.

It is solid and definitely made for outside long term exposure.

Size is a bit tight, but the two radios fit neatly, the microphones and leads were the main challenge.

Swapping over boxes did not take long, all the cables reached.

The gap between the two radios was just enough, a single radio would fit with ease, but once I tried to install the two microphones, things became a bit too tight.



Empty box mounted



Two radios ready for microphone cables

The microphone cable joiners have seen better days, so they were replaced, these things seem to be made cheap and nasty. After deciding two radios with enclosed microphones was too much of a cram, I got a second box and gave each radio its own home.



The closed boxes, very waterproof
The joy of operating in the yard



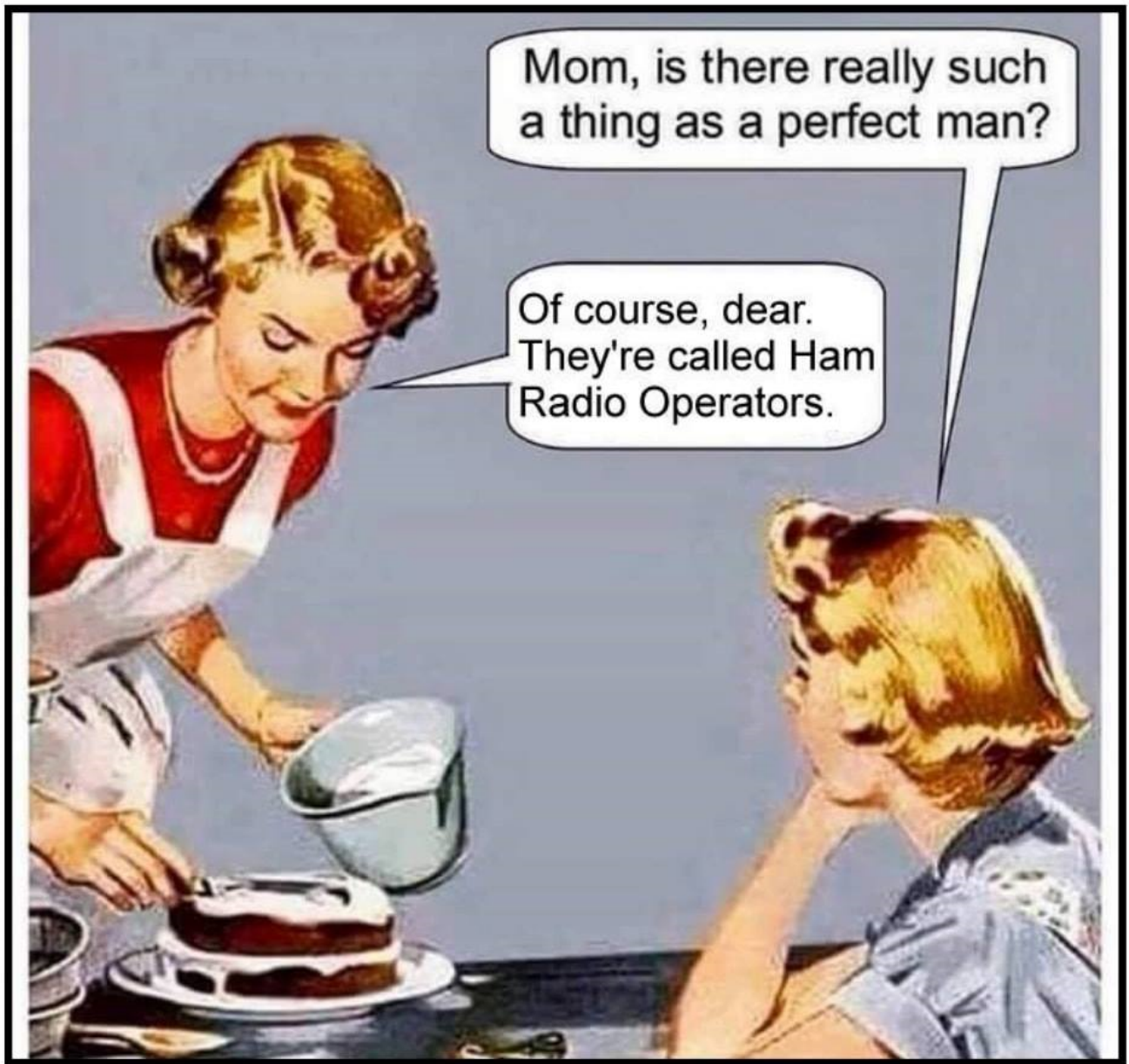
Improved operating space
The FT400 radio body in its box with homemade speaker grill



Having one of the radios in different places means the audio can heard from different areas so you know which microphone to grab when you hear a QSO. The other radio, IC-2820H radio, is under the decking floor. The CAT5 cable microphone connectors have seen better days and have since been replaced.

This arrangement gives me two dual band radios, one Dstar and one C4FM, along with normal FM for any combination of 2 meters and 70cm. One of my spare 23cm rigs might go into a future third box... time will see.

~Mick VK3CH



HAM RADIO OPERATOR



WHAT MY FRIENDS THINK I DO



WHAT MY WIFE THINKS I DO



WHAT SOCIETY THINKS I DO



WHAT MY KIDS THINK I DO



WHAT I THINK I DO



WHAT I ACTUALLY DO

**CALL HAM RADIO
CB...**

ONE MORE SQUELCHING TIME

memegenerator.net



Moorabbin and District Radio Club.

PO Box 58 Highett 3190

VK3APC

***** Saturday 11th May, 2019 *****

HAMFEST 2019

Location – Southern Community Centre - Rupert Drive, Mulgrave
Melways Reference **80 F4** (Enter via Huxley Ave off Police Rd.)



- * GREAT VENUE
- * PLENTY OF SPACE
- * MELBOURNES BIGGEST
- * MAJOR AND MINOR DOOR PRIZES

The Moorabbin & District Radio Club have much pleasure in inviting you to participate in
VK3's BIGGEST ANNUAL HAMFEST
Snacks and hot food will be available – FREE TEA & COFFEE!

Talk in via 439.900Mhz 70cm VK3RSE

PRIZE DRAWS: Every entry ticket goes into the draw & additional tickets on sale

SALES: NEW - Importers and suppliers of amateur equipment & accessories.

SALES: USED - Preloved ham gear & accessories, PC's & bits & pieces

All inside and undercover. Demonstrations of Radio equipment and accessories.

ENTRY ONLY \$7.00

(Doors Open 10am – entry tickets on sale prior)

(INCLUDES FREE DRAW IN THE MAJOR DOOR PRIZE.....)

Tables available at \$20 each, (1.8m long)
includes lunch voucher. Please contact:

Lee Moyle, VK3GK. Tel: BH/AH (03) 9705 1051

Email: vk3gk@aanet.com.au

Graeme Lewis, VK3GL. Tel AH: (03) 56295994 or

Mobile (0418) 171601

Email: vk3gl@bigpond.com



Webpage - www.mdrc.org.au

Sherlock Holmes and Dr Watson Go Camping

"Sherlock Holmes and Dr. Watson go on a camping trip, set up their tent, and fall asleep. Some hours later, Holmes wakes his faithful friend.

"Watson, look up at the sky and tell me what you see."

Watson replies, "I see millions of stars."

"What does that tell you?" Holmes asked.

Watson ponders for a minute.

"Astronomically speaking, it tells me that there are millions of galaxies and potentially billions of planets.

Astrologically, it tells me that Saturn is in Leo.

Time wise, it appears to be approximately a quarter past three.

Theologically, it's evident the Lord is all-powerful and we are small and insignificant.

Meteorologically, it seems we will have a beautiful day tomorrow.

What does it tell you?"

Holmes is silent for a moment, then speaks.

"Watson, you idiot, someone has stolen our tent."

At the third stroke, there will be ... no more dial-up talking clock

For 66 years, its sonorous voice has provided certainty at times of doubt, but at the third stroke after midnight on October 1, Australia's 'talking clock' will fall silent. After September 30, you won't be able to dial 1194 to find out the exact time. No longer will that striking, somewhat ominous, voice intone: "at the third stroke, it will be... 10.27 and 50 seconds" before the familiar "pip, pip, pip".

But the ultimate decision belonged to Telstra, which provides the service's network and billing, and Telstra is pulling the plug. A Telstra spokesman said the service was not compatible with its new network technology.

Mr Benjamin is optimistic that Telstra will reverse the decision. "There is another network solution to provide it: cutting out ISDN [the older, Integrated Services Digital Network that carries voice and data services over the switched telephone network] - and using SIP [Session Initiation Protocol, that can send all forms of media including voice, data and video, to multiple parties].

"And ISDN is being phased out over the next three years. They don't need to cut this service off now."

The Telstra spokesman said although the public "now have many devices that provide an accurate time", the service has been given a three-month extension from the initial shut-down date June 30 "to give users more time to find an alternative solution".

But Mr Benjamin, from Informatel, said the talking clock should be retained as a community service.

He said some businesses and customers without smart phones relied upon it.

"You and I rely on our [mobile] phones and most times, that would be fine. But there are other people who aren't as capable of looking at their phone or who are comfortable using the service because they've done it for decades. It's an important part of their lives".

Mr Benjamin said it would cost too much money and effort to find another network provider.

Before its automation 66 years ago, people wanting to know the precise time would dial a telephone exchange, and operators would read the time from the exchange clock.

In 1953, well-spoken theatre critic Gordon Gow was paid £100 to record the hours, minutes and seconds for a new, mechanised system.

About 15 years ago, Telstra outsourced management of the service, nicknamed "George" to Informatel.

In 1990, Telstra replaced Gow's voice with ABC broadcaster Richard Peach.

Peach's voice can still be heard long after his death in 2008, although his relatives don't receive any royalties.

~Internet



Into Raspberry Pi?

Lots of free info that you can download as PDF here <https://www.raspberrypi.org/magpi/issues/>

They have tutorials on all aspects of programming such as,

C & GUI PROGRAMMING

LEARN C ESSENTIALS

COMMAND LINE PROGRAMMING

SCRATCH PROGRAMMING

BEGINNER'S GUIDES

HAM RADIO PROJECTS

New digital mode FT4

Joe Taylor K1JT has announced a new digital mode, FT4, which is 2.5 times faster than FT8. FT4 is an experimental digital mode designed specifically for radio contesting. Like FT8, it uses fixed-length transmissions, structured messages with formats optimized for minimal QSOs, and strong forward error correction.

T/R sequences are 6 seconds long, so FT4 is $2.5 \times$ faster than FT8 and about the same speed as RTTY for radio contesting.

FT4 can work with signals 10 dB weaker than needed for RTTY, while using much less bandwidth. FT4 message formats are the same as those in FT8 and encoded with the same (174,91) low-density parity check code. Transmissions last for 4.48 s, compared to 12.64 s for FT8. Modulation uses 4-tone frequency-shift keying at approximately 23.4 baud, with tones separated by the baud rate. The occupied bandwidth, that containing 99% of transmitted power, is 90 Hz.

Further information on FT4 is at [http://physics.princeton.edu/pulsar/k1jt/FT4 Protocol.pdf](http://physics.princeton.edu/pulsar/k1jt/FT4%20Protocol.pdf)



The FT4 Protocol for Digital Contesting

Joe Taylor, K1JT, Steve Franke, K9AN, and Bill Somerville, G4WJS
April 22, 2019

Introduction: FT4 is an experimental digital mode designed specifically for radio contesting. Like FT8, it uses fixed-length transmissions, structured messages with formats optimized for minimal QSOs, and strong forward error correction. T/R sequences are 6 seconds long, so FT4 is $2.5 \times$ faster than FT8 and about the same speed as RTTY for radio contesting. FT4 can work with signals 10 dB weaker than needed for RTTY, while using much less bandwidth.

Basic parameters: FT4 message formats are the same as those in FT8 and encoded with the same (174,91) low-density parity check code. Transmissions last for 4.48 s, compared to 12.64 s for FT8. Modulation uses 4-tone frequency-shift keying at approximately 23.4 baud, with tones separated by the baud rate. The occupied bandwidth (that containing 99% of transmitted power) is 90 Hz. Threshold sensitivity for 50% decoding probability is $S/N = -16.4$ dB, measured in the standard 2500 Hz reference noise bandwidth. *A priori* (AP) decoding can push threshold sensitivity down to -18 dB or better.

Installation and Initial Setup

To join the FT4 test group and participate in one or more upcoming “mock contest” practice sessions, follow these steps to install and configure a release candidate for *WSJT-X 2.1.0*:

1. Download the installation package from a link to be provided.
2. Install the program in the usual way for your operating system. To avoid conflict with your normal operation, you may wish to use a different installation directory from that used for *WSJT-X 2.0*.
3. Start the program as you normally would for FT8.
4. From the **Configurations** menu select **FT8 | Clone** (or **Default | Clone**).
5. **Rename** the resulting new configuration to **FT4**, and select the new configuration.
6. Select **FT4** from the **Mode** menu.
7. On the **File | Settings | Frequencies** tab, right-click any line in the **Working Frequencies** table and press the **Reset** button. This action will pick up the recommended working frequencies for FT4.
8. Check the box **Special operating activity** on the **Settings | Advanced** tab. Then select **RTTY Roundup messages** and enter your proper contest exchange in the field **RTTY RU Exch**.
9. Instructions for connecting *WSJT-X* to *N1MM Logger+* can be found in the *WSJT-X 2.1 User Guide*, [Section 4.5](#).

You now have a release candidate for *WSJT-X 2.1.0* configured for FT4 operation. You might find it useful to download and examine an FT4 sample file. Select **Download Samples** from the **Help** menu and tick the **FT4** box. Configure the **Wide Graph** controls as shown in Figure 1 and select **Deep** on the **Decode** menu, then open the sample file from the **File** menu. The recorded interval should produce 19 decodes, as seen in Figure 1. Most of the decoded signals are inaudible or barely audible in the audio file. Fewer than one-third are strong enough to be reliably decoded if they had been RTTY signals — and only then if they were spread out over a much wider frequency range.

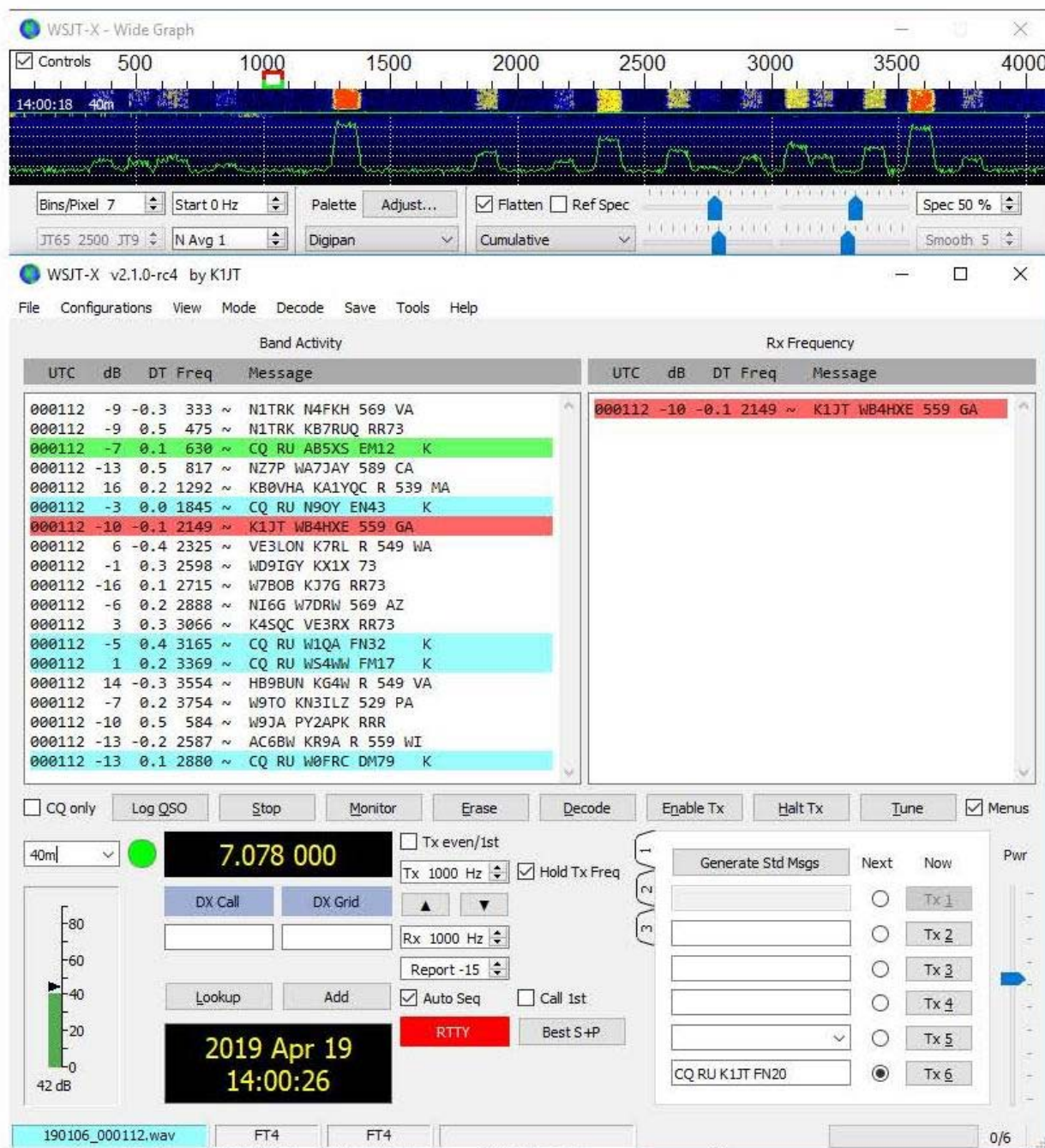


Figure 1. — Screen shot showing simulated FT4 signals and their decodes.

Operation: Aside from its much shorter T/R sequences, FT4 behaves essentially the same way as FT8. One new on-screen control is available for FT4 operation, a button labeled **Best S+P**, just below the **Call 1st** checkbox. Clicking this button during an Rx cycle arms the program to examine all CQ messages decoded at the end of the 6-second Rx sequence. The program will select the best potential QSO partner (from a contesting perspective), and treat it as if you had double-clicked on that line of decoded text. Here “best potential QSO partner” means “New Multiplier” (1st priority) or “New Call on Band” (2nd priority). “New Multiplier” is currently interpreted to mean “New DXCC”; a more broadly defined multiplier category (for the ARRL RTTY Roundup rules) will be implemented soon. We may also provide additional priority rankings, for example “New Grid on Band” (useful for North American VHF contests), sorting by signal strength, etc.

For keyboard control of transmitted messages, check the box **Alternate F1–F6 bindings** on the **Settings | General** tab. In typical contest-style operation you can then hit function key **F1** to solicit a QSO by sending CQ. To respond to a CQ and send your contest exchange, double-click on the decoded message. Alternatively, you can click on **Best S+P** and let the selection algorithm choose a station to call. **Auto Seq** and **Call 1st** checkboxes behave as in FT8, and thus the remainder of a minimal QSO can continue without further operator action. Function keys **F2 – F5** may be used to send messages displayed in entry fields for Tx2 – Tx5 on tab 1, at bottom right of the main window. Function key **F6** toggles the checked status of **Call 1st**, and key combination **Alt+B** can be used to toggle the armed status of **Best S+P**.

FT4 is presently configured so that a station operating in Search-and-Pounce (“S+P”) mode logs a QSO when RR73 is transmitted, and the CQing (“Run”) station logs a QSO when RR73 is received. Like FT8, FT4 makes little distinction between an S+P station and a Run station. An operator can switch easily and frequently between these two ways of initiating QSOs, and contesting skill will depend on optimizing these and many other operating decisions. With a steady stream of available stations to work, single-radio QSO rates well above 100/hour are possible using FT4.

Transmitted signal: FT4 uses a modulation technique known as Gaussian frequency shift keying, or GFSK. The generated audio waveform consists of 105 symbols (tones) sent in sequence at one of four frequencies. The encoded series of distinct tones for part of a transmission might originally look like the upper (red) curve in Figure 2. However, in FT4 the sequence of frequencies is smoothed by convolution with a Gaussian function before being sent to the software modulator. The blue curve shows the corresponding smoothed sequence of frequencies actually sent to the modulator. The transmitted sequence no longer has any stepwise discontinuities.

Differences between the red and blue curves seem rather small, but spectra of the resulting audio waveforms are remarkably different. Figure 3 shows spectra for an FT4 signal (blue) and a standard continuous-phase FSK signal (red) for the same encoded bit sequence. The GFSK spectrum has steep skirts, occupying a bandwidth of only 75 Hz at –6 dB, 200 Hz at –60 dB, and 260 Hz at –80 dB. No additional filtering is applied to the audio waveforms.

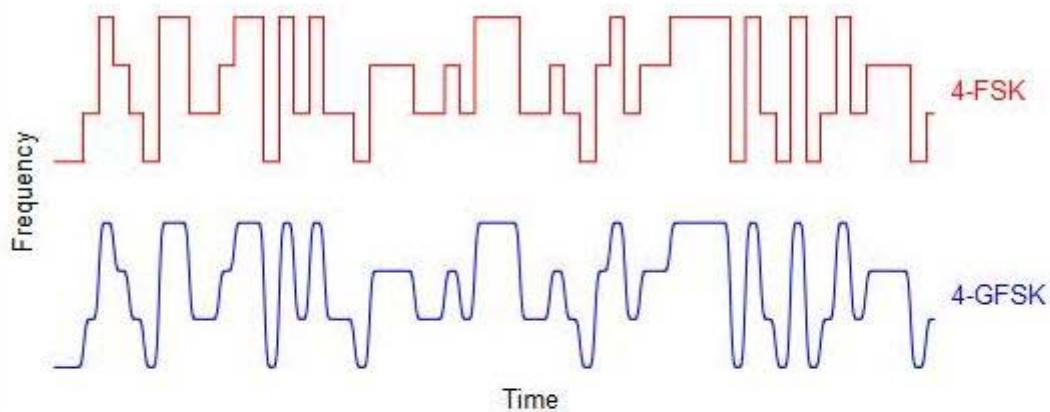


Fig 2. — Example of the encoded (red) and smoothed (blue) frequency sequences for part of an FT4 message.

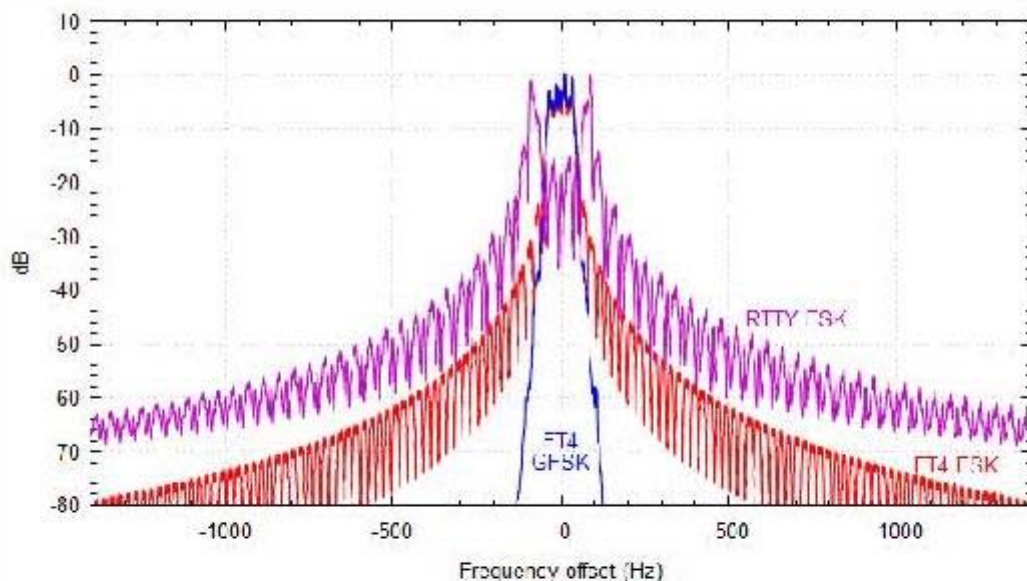


Fig 3. — Spectra of an FT4 signal transmitted with GFSK (blue), FT4 with FSK (red), and RTTY with continuous-phase FSK (purple).

Figure 3 also shows the spectrum of a standard RTTY signal (purple), which is more than 2000 Hz wide at -60 dB. Some ham software generating RTTY signals by audio frequency shift keying (AFSK) offers optional filtering of the waveform to reduce the unwanted keying sidebands. However, such post-modulation filtering necessarily destroys the constant-envelope nature of the continuous-phase FSK signal and leaves behind a waveform that must be amplified with good linearity to avoid generating new unwanted sidebands. In contrast, the GFSK signal of FT4 has a constant envelope and is immune to inter-modulation distortion.

Decoding and Frequency Usage: The FT4 decoder in *WSJT-X 2.1* identifies and decodes signals anywhere in a passband up to 5 kHz wide. As in other *WSJT-X* modes, received messages are “all or nothing” — there are no partial decodes, and false decodes are rare. Subtraction of decoded signals from the received data stream enables decoding of transmissions that overlap in frequency with other, possibly much stronger signals. The last three decodes shown in the Band Activity window in Figure 1 are examples of such second-pass decodes. With the normal odd/even sequencing of transmissions and signals spaced at intervals 120 – 150 Hz, as many as 50 stations can operate in a 3 or 4 kHz passband with little interference, even when signal strengths differ by as much as 60 dB.

Experience will tell what may be the best strategy for selecting dial frequencies during contests, and for how many ~3 kHz segments should be used for FT4 on each band. As initial guidelines we suggest the following default dial frequencies for FT4: 3.595, 7.090, 10.140, 14.140, 18.104, 21.140, 24.919, 28.180, 50.318, 144.170 MHz. We will welcome any feedback that could lead to better frequency choices.

Sensitivity: Figure 4 presents measurements of FT4 decoder sensitivity over a wide range of simulated propagation conditions. Paired numbers at the right give the Doppler spread (Hz) and two-path differential delay (ms) for various sets of ITU-standard conditions, using the Watterson model for ionospheric propagation. The left-most solid curves correspond to common mid-latitude propagation paths in undisturbed conditions. Dashed curves show the measured sensitivities for decoding with maximum *a priori* information, in two extremes of propagation conditions. For a rough comparison with RTTY, we note that in simulated mid-latitude moderate conditions RTTY has been shown to yield character error rates less than 10% only when SNR exceeds –1 to +4 dB, depending on the software modem in use. FT4 offers a sensitivity advantage of about 10 dB over RTTY.

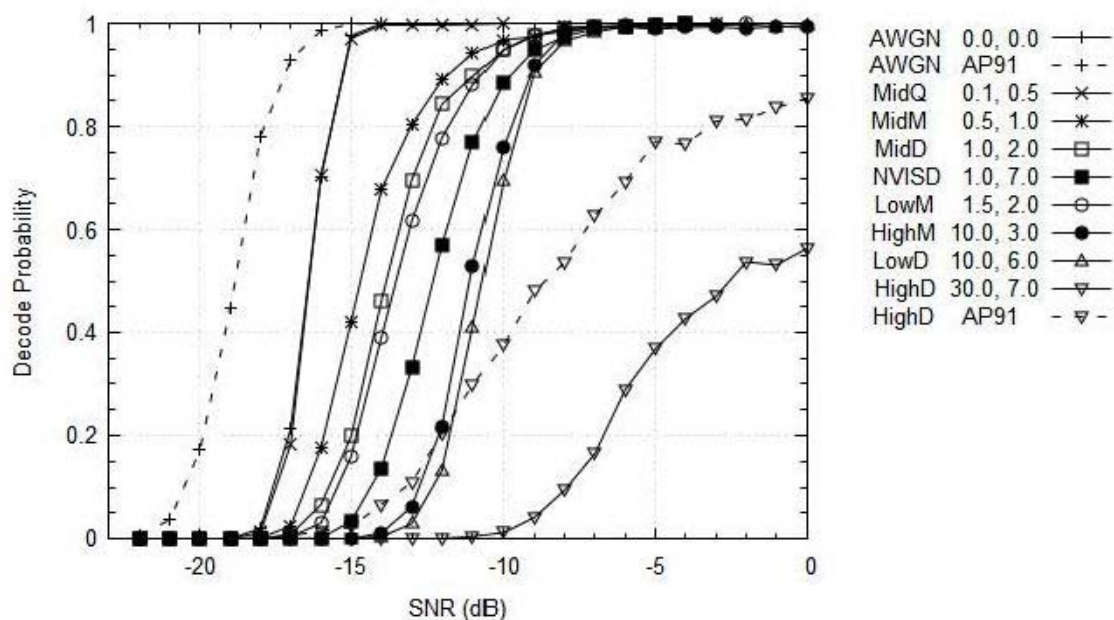


Fig 4. — Measured decoding probability for FT4 as a function of SNR. AWGN means Additive White Gaussian Noise; Low, Mid, and High refer to geomagnetic latitude; Q, M, and D imply Quiet, Moderate, or Disturbed ionospheric conditions; NVIS means Near Vertical Incidence Skywave; AP91 refers to *a priori* decoding of the RR73 message in a typical contest QSO.

Previous testing: Early release candidates of *WSJT-X 2.1.0* enabled us to explore the advisability of making FT4 an asynchronous mode with no fixed start times for T/R intervals. These tests served to highlight the significant advantages of using time-synchronized sequences. Fixed sequence lengths with prescribed start times ensure that a much larger fraction of received signals are decodable, especially in contest-like operating conditions where a given station may transmit roughly half the time. In terms normally used for communications engineering, synchronization increases channel capacity.

Schedule: A few parameters and operating behaviors of FT4 are still being tested and optimized. It will be very useful to hold several more mock contest practice sessions, with a larger group of active participants. Even if these reveal no serious bugs or inadequacies, we think FT4 is too new to be used in two upcoming events: the ARRL VHF Contest (June 8-10) and ARRL Field Day (June 22-23). Consequently we plan to build a release candidate *WSJT-X 2.1.0-rc5* that will “time out” on June 7, 2019. As far as possible, we plan to adhere to the following schedule:

- April 22: Public announcement about FT4, with a link to this document
- April 29: Second announcement, with links to downloadable installation packages for *WSJT-X 2.1.0-rc5*
- May 9, 0000 – 0100 UTC: FT4 practice session, 7.090 MHz
- May 14, 0000 – 0100 UTC: FT4 practice session, 7.090 MHz
- June 5, 0000 – 0100 UTC: FT4 practice session, 7.090 MHz (if needed)
- July 15: General Availability (GA) release of *WSJT-X 2.1.0*

Random concluding thoughts: FT4 is a special-purpose mode designed for rapid-fire contest QSOs. It serves this purpose very effectively, but like FT8 the mode is not useful for more extensive conversations. FT4 uses much less bandwidth than RTTY and provides reliable decoding at much lower signal levels. It has no need for “Super Check Partial” or similar contesting aids, and skilled operators using FT4 will find less motivation to use a DX Cluster or other non-radio aids. All information necessary to score well in a contest can be obtained over the air, during the contest, through one’s own antennas and radios. With FT4 there is little distinction between CQ and S+P operation, so it’s easy to switch frequently between the two ways of finding QSO partners. Stations using low power and compromise antennas can participate effectively in a contest using FT4.

FT4 Digital Protocol download available from here

<http://physics.princeton.edu/pulsar/k1jt/wsجتx.html>

NEVARC Nets

40M Net

Monday, Wednesday and Fridays
10am Local time (East coast)

7.095 MHz LSB

Approximately + or - QRM

Hosted by Ron VK3AHR

80M Net

Wednesday 20:30 Local time

3.622 MHz LSB

Hosted by Ron VK3AHR

Using the club call VK3ANE

2M Nets

Monday at 2000 local time on
VK3RWO repeater
146.975 MHz

President, VK2VU, Gary
Vice President, Tom VK3NXT
Secretary, VK2FKLR, Kathleen
Treasurer, Amy



NEVARC CLUB PROFILE

History

The North East Victoria Amateur Radio Club (NEVARC) formed in 2014.
As of the 7th August 2014, Incorporated, Registered Incorporation number A0061589C.
NEVARC is an affiliated club of the Wireless Institute of Australia.

Meetings

Meetings details are on the club website, the Second Sunday of every month, check for latest scheduled details.
Meetings held at the Belviour Guides Hall, 6 Silva Drive West Wodonga.
Meetings commence with a BBQ (with a donation tin for meat) at 12pm with meeting afterwards.
Members are encouraged to turn up a little earlier for clubroom maintenance.
Call in Via VK3RWO, 146.975, 123 Hz tone.

VK3ANE NETS

HF

7.095 MHz Monday, Wednesday, Friday - 10am Local time
3.622 MHz Wednesday - 8.30pm Local time

VHF

VK3RWO Repeater 146.975 MHz – Monday - 8pm Local time
All nets are hosted by Ron Hanel VK3AHR using the club callsign VK3ANE

Benefits

To provide the opportunity for Amateur Radio Operators and Short Wave Listeners to enhance their hobby through interaction with other Amateur Radio Operators and Short Wave Listeners. Free technology and related presentations, sponsored construction activities, discounted (and sometimes free) equipment, network of likeminded radio and electronics enthusiasts. Excellent club facilities and environment, ample car parking.

Website: www.nevarc.org.au

Postal: NEVARC Secretary
PO Box 69
Wahgunyah Vic 3683

All editors' comments and other opinions in submitted articles may not always represent the opinions of the committee or the members of NEVARC, but published in spirit, to promote interest and active discussion on club activities and the promotion of Amateur Radio. Contributions to NEVARC News are always welcome from members.

Email attachments of Word™, Plain Text, Excel™, PDF™ and JPG are all acceptable.

You can post material to the Post Office Box address at the top of this page, or email magazine@nevarc.org.au

Please include a stamped self-addressed envelope if you require your submission notes returned.

Email attachments not to exceed 5 Mb in file size. If you have more than 5 Mb, then send it split, in several emails to us.

Attachments of (or thought to be) executable code or virulently affected emails will not be opened.

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Other articles credited to outside sources should ask for their permission if they are used.

While we strive to be accurate, no responsibility taken for errors, omissions, or other perceived deficiencies, in respect of information contained in technical or other articles.

Any dates, times and locations given for upcoming events please check with a reliable source closer to the event.

This is particularly true for pre-planned outdoor activities affected by adverse weather etc.

The club website [http://nevarc.org.au/](http://nevarc.org.au) has current information on planned events and scheduled meeting dates.

You can get the WIA News sent to your inbox each week by simply clicking a link and entering your email address found at www.wia.org.au The links for either text email or MP3 voice files are there as well as Podcasts and Twitter. This WIA service is FREE.